

AMERICAN MUSEUM *Novitates*

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK, N.Y. 10024
Number 2888, pp. 1-15, figs. 1-44
September 2, 1987

A Review of the Chilean Spiders of the Superfamily Migoidea (Araneae, Mygalomorphae)

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ABSTRACT

The spider superfamily Migoidea is represented in Chile by four species and genera. Three belong to the family Migidae: *Migas vellardi* Zapfe (the female of which is described for the first time, and which remains of uncertain placement within the subfamily Miginae), the new genus and species *Mallecomigas schlingeri* (assigned, for the time being, to the probably paraphyletic subfamily Calathotarsinae, although it may prove to represent

the sister group of all other migids), and *Calathotarsus coronatus* Simon (the male of which is described for the first time). The fourth species belongs to the family Actinopodidae and the new genus *Plesiolenia*, based on *Missulena bonneti* (Zapfe), the female of which is described for the first time; *Plesiolenia* is hypothesized to be more closely related to the Australian genus *Missulena* than to the tropical American genus *Actinopus*.

INTRODUCTION

The mygalomorph spider superfamily Migoidea, as defined by Raven (1985), contains two families (the Migidae and Actinopodidae) that are the most apomorphic representatives of the microorder Fornicephalae, a group including most of the classical "trap-door spiders" as well as the more plesiomorphic families Atypidae and Antrodiaeti-

dae (Raven, 1985). Both migoid families are austral in distribution, and the migids, which occur on all the southern continents, have therefore attracted considerable attention from biogeographers (Pocock, 1903; Legendre, 1979; Platnick, 1981). Although modern studies exist on the migids of New Zealand (Wilton, 1968), Australia (Raven,

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1984), Africa (Griswold, in press a, in press b), and Argentina (Schiapelli and Gerschman, 1973, 1975), knowledge of the Chilean migoid fauna is sparse. Only three species have been recorded, each of which was previously known from only one sex (Legendre and Calderón, 1984). Material accumulated in various collections over recent years has allowed us to describe here each of the missing sexes as well as a fourth species.

To save space, a system of abbreviations is used to describe leg spination and other meristic features, as follows: A, apical; B, basal; D, dorsal; M, mesal; P, prolateral; R, retrolateral; V, ventral. Anterior, posterior, inferior, and superior are abbreviated as ant., post., inf., and sup., respectively. Conventions such as 1:2A, 1:3A, or 2:4M indicate that the spines or trichobothria referred to are in the apical half, apical one-third, or medial two-fourths of the segment, respectively. Enlarged setae are listed as spines but denoted by lowercase letters (e.g., patella III 17d ant.). Claw tooth patterns are described as follows: T- indicates one tooth, TT- a bifid tooth, d- a denticle, Td- a tooth bearing a denticle, and t- a small tooth. Abbreviations for eye patterns are standard for the Araneae; all measurements are in millimeters.

Material has kindly been provided by the following institutions and curators: AMNH, American Museum of Natural History; CAS, California Academy of Sciences, Dr. W. Pultawski; MACN, Museo Argentino de Ciencias Naturales, Drs. E. A. Maury and M. E. Galiano; MNHN, Muséum National d'Histoire Naturelle, Paris, Dr. J. Heurtault; MNS, Museo Nacional de Historia Natural, Santiago, Drs. H. Zapfe and A. Camousseight M.; and UCB, Essig Museum of Entomology, University of California at Berkeley, Dr. E. I. Schlinger. We are grateful to our Chilean colleagues Drs. R. Calderón G. of the Universidad de Playa Ancha, Valparaíso (RCG), and L. E. Peña G. for their assistance in the field and for supplying many fascinating specimens, and to Drs. F. A. Coyle of Western Carolina University, C. E. Griswold of the American Museum of Natural History, and R. J. Raven of the Queensland Museum for their helpful comments on various drafts of the manuscript. This work was supported by National Science Foundation grants BSR-

8312611 and BSR-8406225 to the second author.

SYSTEMATICS

MIGIDAE SIMON

Migas vellardi Zapfe

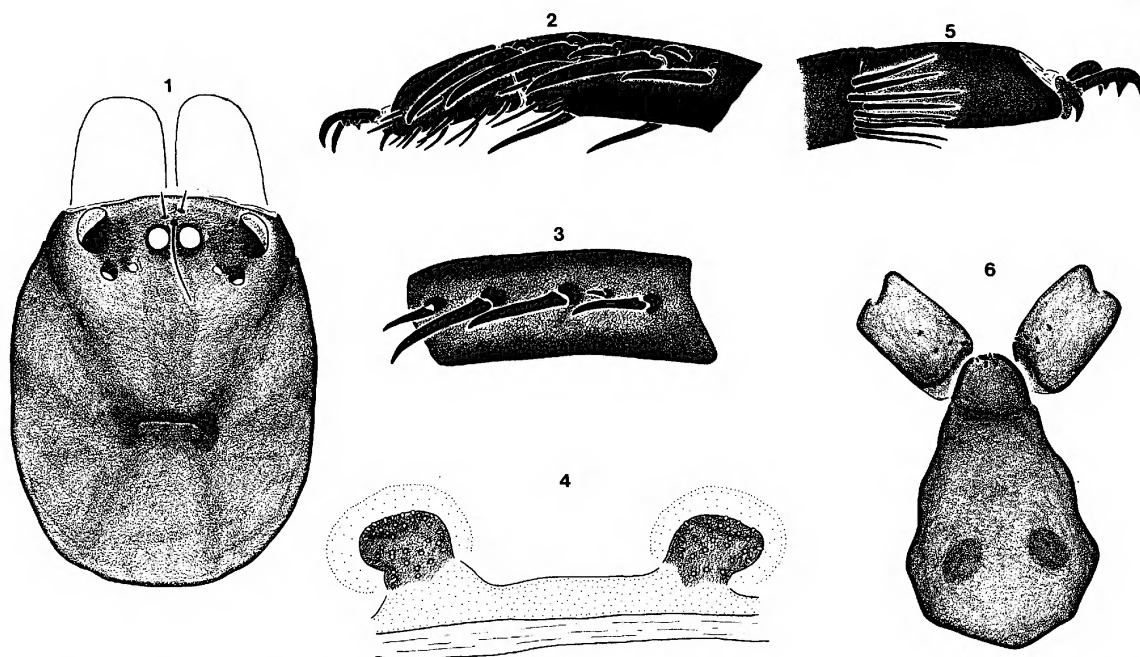
Figures 1-9, 11, 20

Migas vellardi Zapfe, 1961: 153, figs. 4, 5 (male holotype from La Herradura, Elqui, Region de Coquimbo [IV], Chile, in MNS, examined). — Legendre and Calderón, 1984: 1040, pl. X, figs. 1-10.

DIAGNOSIS: Females, newly described here, can be distinguished from those of the other Chilean migids by their short, wide spermathecae (fig. 4).

MALE: Described by Zapfe (1961) and Legendre and Calderón (1984).

FEMALE: Carapace, chelicerae, palpi, and legs yellowish brown; abdomen gray, unpatterned. Carapace (fig. 1) 2.93 long, 2.43 wide, 2.26 high, with posterior margin rounded, not notched; pars cephalica flattened, height 1.26 times that of pars thoracica, length 0.90 of width, occupying 0.59 of carapace length, 0.79 of carapace width; fovea basically straight but with recurved ends, occupying 0.23 of carapace width. Eyes occupying 0.78 of cephalic width, OQ 2.72 times wider than long, MOQ 2.67 times wider than long; ALE largest, set near anterior margin of carapace, clypeus therefore short. Three setae situated in front of AME, one large, thick seta between AME, 10 very short, thin setae in front of OQ, two thin and 6-8 thinner setae behind PME, three longitudinal rows, each of about 20 very thin setae, extending back from OQ. Chelicerae distally rounded, without rastellum, with four subequal, separated teeth along each margin and six denticles between margins; fangs keeled, with small, rounded, inconspicuous outer tooth at base. Labium with four cusps (fig. 6), length 0.86 times width. Palpal coxae longer than wide, with 4-5 cusps, without serrula, with some bifid setae (fig. 9). Sternal width 0.77 times length, only posterior sigilla visible, those large, oval, shallow; labium separated by shallow groove. Leg formula 4123; tibiae and metatarsi I, II flattened, with very long spines (figs. 2, 3); tibia III not excavated. Measurements:



Figs. 1-6. *Migas vellardi* Zapfe, female. 1. Carapace and chelicerae, dorsal view. 2. Right metatarsus and tarsus I, prolateral view. 3. Right tibia I, prolateral view. 4. Spermathecae, dorsal view. 5. Right tarsus IV, retrolateral view. 6. Sternum, labium, and palpal coxae, ventral view.

	I	II	III	IV	Palp
Femur	2.15	1.80	1.67	2.23	1.43
Patella-tibia	2.16	1.86	1.57	2.56	1.40
Metatarsus	0.83	0.80	0.73	1.52	—
Tarsus	0.48	0.43	0.53	0.65	0.73
Total	5.62	4.89	4.50	6.96	3.56

Trichobothria: tibiae: I both rows 2 (1:4B); II both rows 3 (1:2B); III ant. row 4 (covering length of segment), post. 2 (1:3B); IV ant. row 2 (1:4B), post. 3 (1:2B); palp ant. row 3, post. 2 (both rows 1:2B); metatarsi: I 4A ant.; II 5 (1:4A); III 7 (1:2A); IV 4 (1:3A); tarsi: I-III 10 (forming diagonal band); IV 4 (in longitudinal row); palp 3 (1:3M); trichobothrial bases with elevated hood (fig. 20). Spines: femora: palp 1PA; I-IV 0 spines, several v post., row of d; patellae: palp 1-1P; I, II 1PA, 1VA ant.; III 17d ant., 15d post.; IV 80/85d ant., 25d post. (1:2A); tibiae: palp 1PB, 1R (1:3A); I 5/6P, 10R; II 5P, 5R; III 12p sup., 24d; IV 0; metatarsi: I 5/6P, 5/6R; II 6P, 4R; III 10p sup., 10d, comb of 18v; IV comb of 11v; tarsi: palp 3P, 3R, 6vA; I 4P, 3R, 10v; II 4P, 5R, 11v; III 25v ant. (stronger toward distal end); IV 0. Paired tarsal claws: I ant.

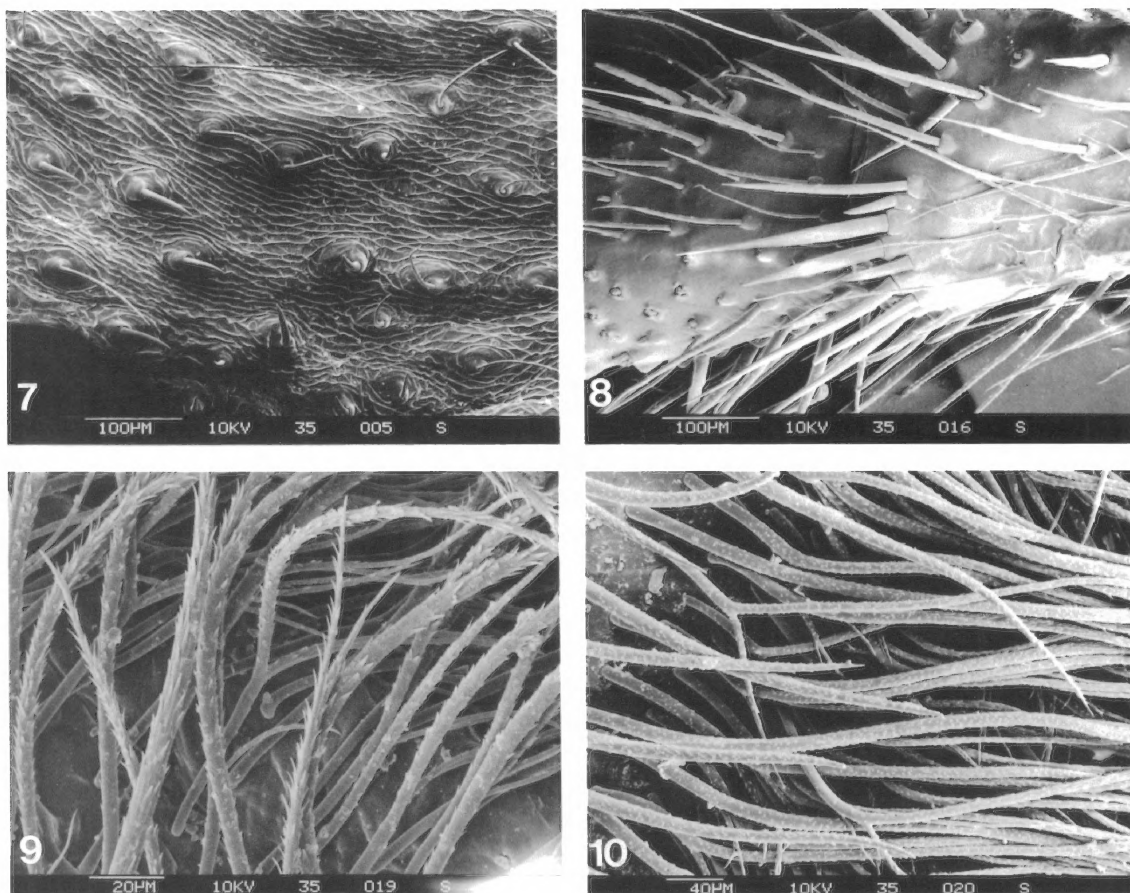
d-T-T-T, post. d-T-t; II ant. Td-T-t, post. T; III both T; IV ant. TT-T, post. T-T; palpal claw d-T; inferior claws all bare, claw reduced on tarsus III (fig. 11). Preening combs (figs. 5, 8) present only on metatarsi III, IV. Abdomen with spiniform setae on anterior edge (fig. 7). Spinnerets short; apical article of posteriors domed, with 15 spigots (one enlarged), medial article with 18 spigots (one enlarged, 3-4 minor grouped around enlarged spigot, remainder small), basal article without spigots, spigots set in clearly delimited area less sclerotized than remainder of cuticle; anterior spinnerets with 10 spigots. Spermathecae short, wide (fig. 4).

VARIATION: No significant variation was detected in the three females examined.

MATERIAL EXAMINED: CHILE: **Region de Coquimbo (IV): Elqui:** Guanaqueros, Jan. 10, 1984 (P. A. Goloboff, E. A. Maury, MACN 8338, 8339), 3♀, 1 penultimate ♂; La Herradura, May 1957 (H. Zapfe, MNS 3637), 1♂ (holotype).

DISTRIBUTION: Known only from Coquimbo, Chile.

NATURAL HISTORY: The holotype was found walking on flat ground after heavy rains



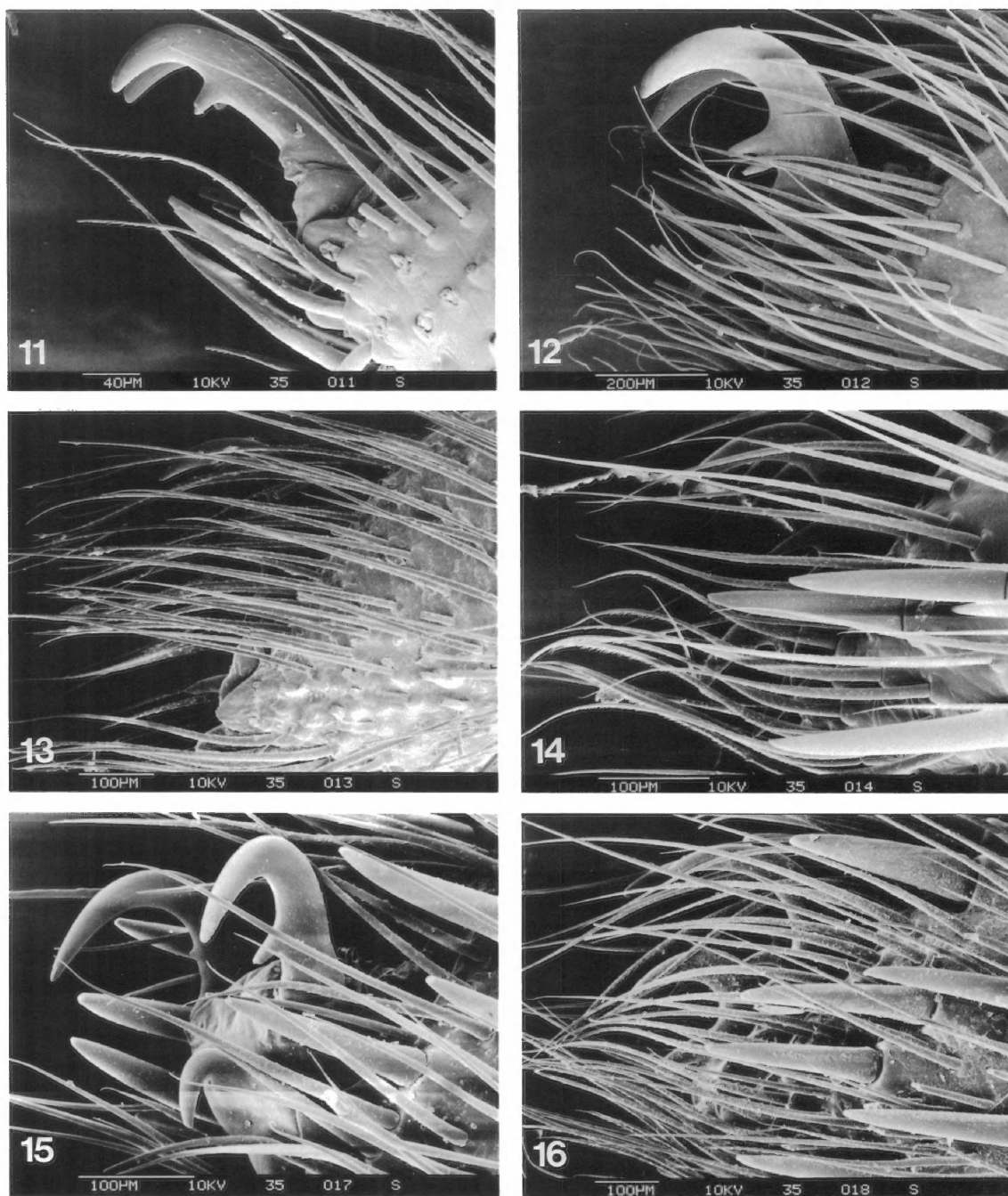
Figs. 7–10. 7–9. *Migas vellardi* Zapfe, female. 10. *Mallecomigas schlingeri*, new species, female. 7. Abdomen, anteromedial view, showing thickened setae. 8. Metatarsus III, retrolateral view, showing preening comb. 9, 10. Palpal coxae, anterior view, showing bifid setae.

(H. Zapfe, pers. comm.). The specimens collected in Guanaqueros, near the type locality, were in dry, sandy, pebbled soil. Whether the animals construct a trapdoor is unknown; the burrows were about 10 cm deep and 5 mm in diameter, with the walls covered by relatively little silk and having a raked appearance. One female had an eggsac in the burrow. Other mygalomorphs taken syntopically were *Grammostola spathulata* (O. P.-Cambridge) and *Mygaloides gajardoi* (Mello-Leitão).

RELATIONSHIPS: This species apparently belongs to the subfamily Miginae. The small basal tooth that is present between the keels of the fang in *M. vellardi* was cited by Raven (1985: 57, 144) as the diagnostic synapomorphy of that subfamily, which contains two

genera: *Migas*, otherwise known from New Zealand, New Caledonia, Tasmania, and Australia, and *Poecilomigas* from Africa. Although this character is present in at least some Actinopodidae (see, for example, the description of *Plesiolena* below), and could therefore be plesiomorphic for the Migidae, Raven (1985: 57) also cited a second migine synapomorphy, a pars thoracica that is as high as the pars cephalica, at least at the level of the fovea, and the relatively low pars cephalica and unexcavated tibiae III of *M. vellardi* do separate the species from those of the two other migid subfamilies, the Calathotarsinae and Paramiginae.

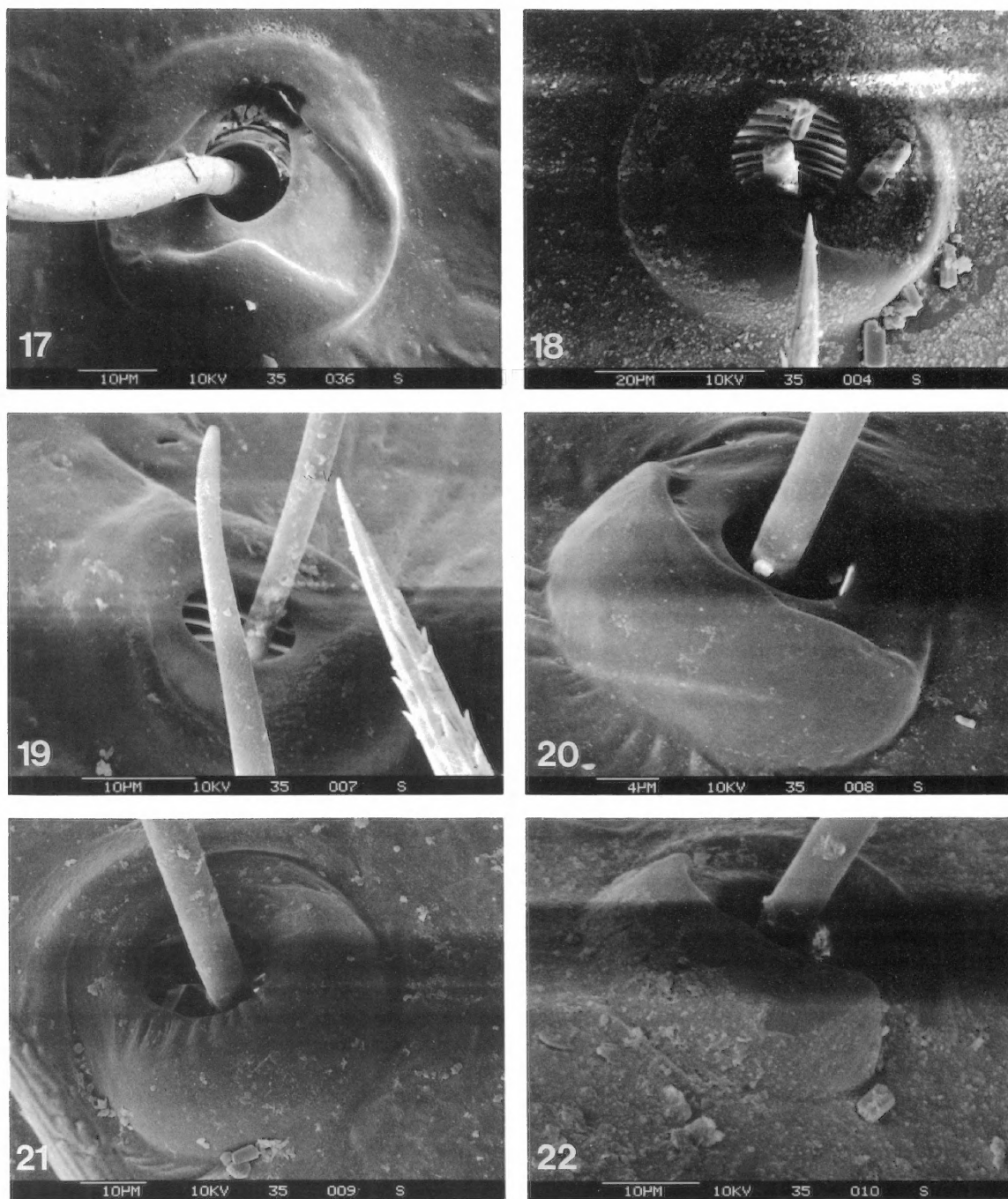
The generic placement of *M. vellardi* nevertheless remains tentative, because (as emphasized by Griswold, in press b) there



Figs. 11–16. Tarsus III of females, retrolateral view. 11. *Migas vellardi* Zapfe, showing reduced, sharply curved inferior claw situated near base. 12. *Mallecomigas schlingeri*, new species. 13. *Calathotarsus coronatus* Simon, showing reduced, straight inferior claw situated near base. 14. *Plesiolena bonneti* (Zapfe). 15. *Actinopus* sp. 16. *Missulena* sp.

are no known synapomorphies uniting the species currently included in *Migas*, and the genitalic diversity among the New Zealand *Migas* documented by Wilton (1968) indi-

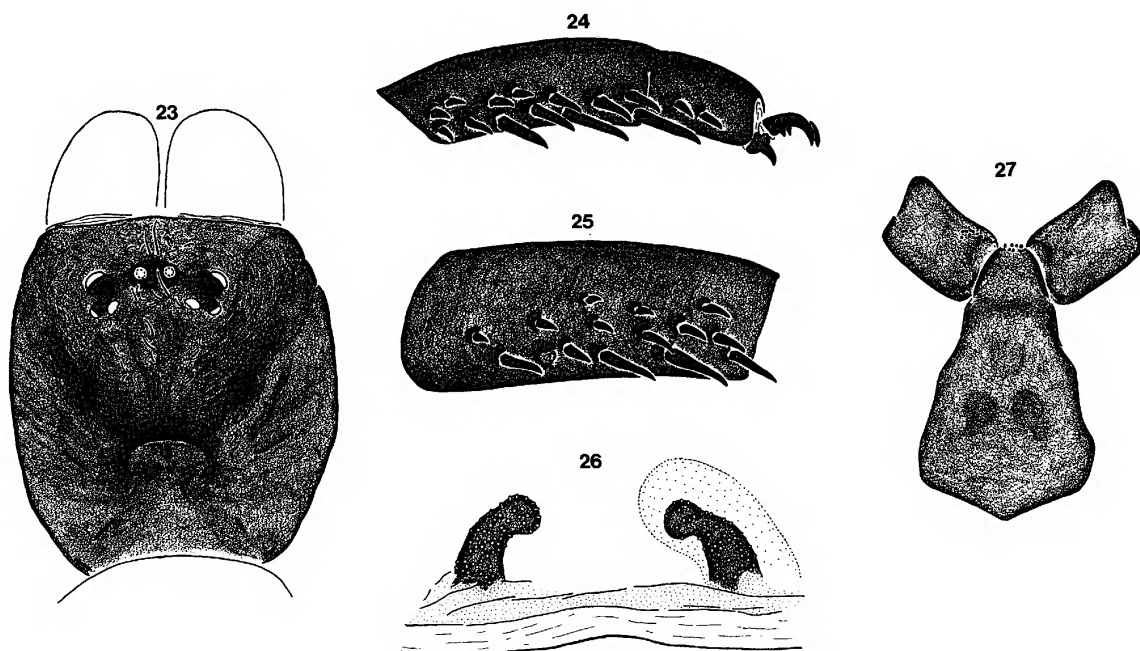
cates that more than one genus is probably involved. Among the characters noted in *M. vellardi*, the reduction of the clypeal length and of the postocular setae may prove to be



Figs. 17–22. Trichobothrial bases from tarsus I of females. 17. *Actinopus* sp. 18. *Missulena* sp. 19. *Plesiolenia bonneti* (Zapfe). 20. *Migas vellardi* Zapfe. 21. *Mallecomigas schlingeri*, new species. 22. *Calathotarsus coronatus* Simon.

only autapomorphies of the species, and the absence of spigots on the basal article of the posterior spinnerets may well prove to be a

synapomorphy at the family level (although liphistiids, atypids, and antrodiaetids also have no spigots on the basal article, such spig-



Figs. 23–27. *Mallecomigas schlingeri*, new species, female. 23. Carapace and chelicerae, dorsal view. 24. Right metatarsus and tarsus I, retrolateral view. 25. Right tibia I, retrolateral view. 26. Spermathecae, dorsal view. 27. Sternum, labium, and palpal coxae, ventral view.

ots are found in the other Rastelloidina and their loss in migids is therefore presumably apomorphic). Perhaps the spiniform setae on the anteromedian surface of the abdomen (fig. 7), the presence of some bifid setae on the palpal coxae (fig. 9; such setae were previously reported only in the Dipluridae, by Coyle, 1986, but are also found in *Mallecomigas schlingeri*, new species, fig. 10), the tarsal spines, the short spermathecae, or the strong apical spines on the male femora I and II (extending even to the lateral surfaces) may eventually prove to be of some value in placing the species.

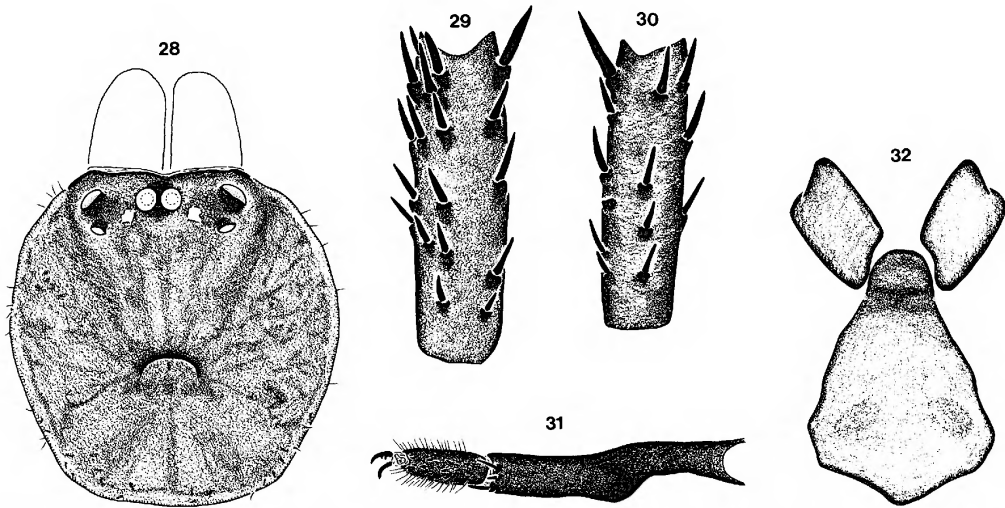
Mallecomigas, new genus

TYPE SPECIES: *Mallecomigas schlingeri*, new species.

ETYMOLOGY: The generic name is a combination of the Chilean province Malleco and *Migas*, and is masculine in gender.

DIAGNOSIS: *Mallecomigas* can be distinguished from the genera of the subfamily Miginae (*Migas* and *Poecilomigas*) by the absence of their putative synapomorphy, an

outer tooth on the cheliceral fang, and from the genera of the subfamily Paramiginae (*Paramigas*, *Moggridgea*, *Micromesomma*, and *Thyropoeus*) by the absence of their apparent synapomorphy, an excavation on tibia III. The arched pars cephalica, a presumably plesiomorphic feature, agrees with that found in the two genera currently assigned to the subfamily Calathotarsinae, *Calathotarsus* from southern South America and *Heteromigas* from Tasmania and Australia. The two calathotarsine genera are not united by any putative synapomorphies; the presence of preening combs on metatarsi III and IV separates *Mallecomigas* from *Heteromigas*, and the normal eye pattern, with the ocular area occupying less than half (rather than two-thirds or more) of the cephalic width, separates *Mallecomigas* from *Calathotarsus*. *Mallecomigas* resembles *Heteromigas*, rather than most other genera of the Migidae and related families, in having rounded (rather than flattened) tibiae and metatarsi I and II, bearing short (rather than elongate) spines (the paramigine genus *Micromesomma* has the segments rounded but with slightly elon-



Figs. 28–32. *Calathotarsus coronatus* Simon, male. 28. Carapace and chelicerae, dorsal view. 29. Left tibia I, ventral view. 30. Right tibia I, ventral view. 31. Right metatarsus and tarsus I, ventral view. 32. Sternum, labium, and palpal coxae, ventral view.

gate spines), and in having the cuspules on the palpal coxae extending to the anterior face of the segment. These differences are not dramatic, but together with the more elevated and convex pars cephalica, may indicate that *Mallecomigas* or *Heteromigas* (or both together) represent the sister group of all other migids. *Mallecomigas* also differs from many other migids, and resembles the Actinopodidae, in having a normal (rather than reduced) inferior claw on leg III (see figs. 11–16).

DESCRIPTION: See species description.

***Mallecomigas schlingeri*, new species**

Figures 10, 12, 21, 23–27

TYPE: Female holotype taken at an elevation of 610 m in the Cordillera de Nahuelbuta, 18 km west of Angol, Malleco, Region de la Araucanía (IX), Chile (Feb. 10, 1967; E. I. Schlinger), from UCB, deposited in Universidad de Chile, Santiago, on long-term loan to CAS.

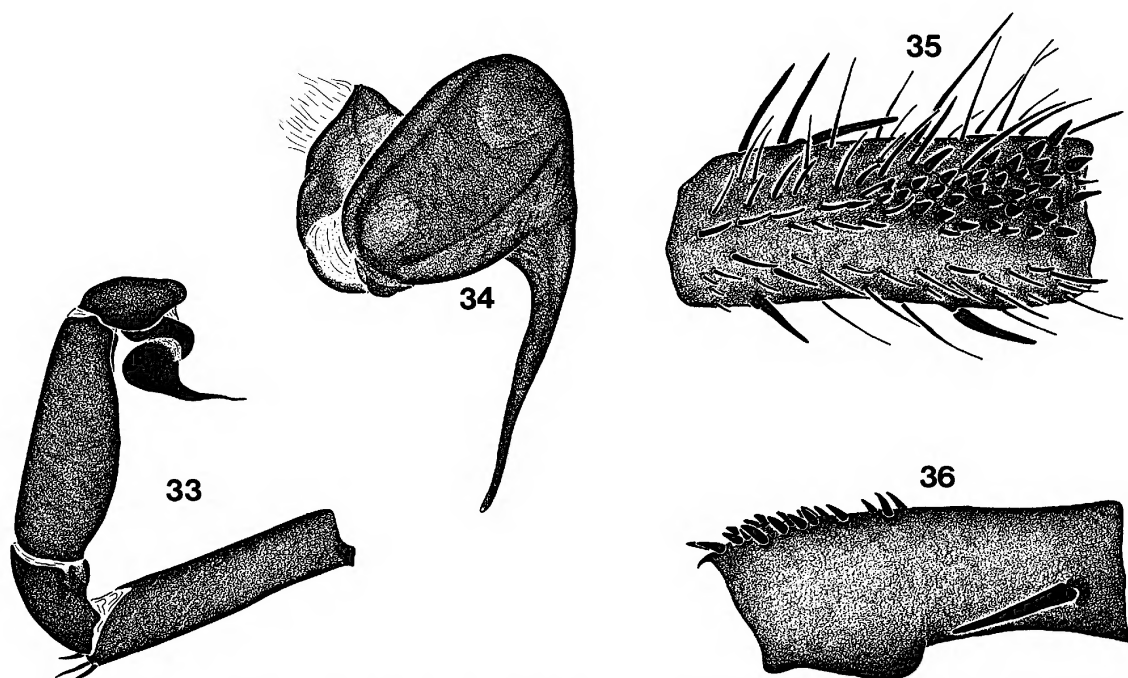
ETYMOLOGY: The specific name is a patronym in honor of Dr. E. I. Schlinger, a specialist on acrocerid flies who has collected many fascinating Chilean spiders, including the holotype described here.

DIAGNOSIS: Only females are known; they can be recognized by having the characters

of the genus and relatively long, distally expanded spermathecae (fig. 26).

MALE: Unknown.

FEMALE: Carapace and appendages reddish brown, abdomen gray. Carapace (fig. 23) 8.36 long, 7.15 wide, 8.32 high, with posterior margin rounded, not notched; pars cephalica moderately elevated, convex, height 1.25 times that of pars thoracica, length 0.76 of width, occupying 0.57 of carapace length, 0.89 of carapace width; fovea recurved, with widened ends and posterior notch, occupying 0.26 of carapace width. Eyes occupying 0.47 of cephalic width, OQ 3.19 times wider than long, MOQ 2.32 times wider than long. Anterior eye row recurved, clypeus elongate, length 1.04 times OQ length. About 30 setae (two long, thick, five moderately thick, remainder very thin) in front of OQ, nine behind PME (seven of them forming transverse row), three longitudinal rows (medial with three, laterals with 6–7) of setae extending back behind OQ, few setae on margins and posterior portion of pars thoracica. Chelicerae distally rounded, without rastellum, with four large teeth on each margin; fangs short, thick, keeled laterally (inner keel slightly wider than outer), without basal tooth. Labium with 10 cuspules (fig. 27), width 0.95 of length. Palpal coxae longer than wide (width 0.58 of length), with 23–25 cuspules ante-



Figs. 33–36. *Calathotarsus coronatus* Simon. 33. Right male palp, retrolateral view. 34. Left male palpal bulb, ventral view. 35. Right female palpal tibia, dorsal view. 36. Right female palpal tibia, prolateral view.

riorly forming long band reaching base of segment, without serrula, with some bifid setae (fig. 10). Sternum flattened, width 0.74 of length, with posterior sigilla clearly visible and one anterior (medial) sigillum possibly vaguely indicated; labium separated by shallow groove. Leg formula 4132; tibia and metatarsi I, II not flattened, with short spines (figs. 24, 25); tibia III not excavated. Measurements:

	I	II	III	IV	Palp
Femur	5.81	5.24	4.38	6.33	4.38
Patella-tibia	6.58	6.29	5.77	8.36	4.71
Metatarsus	2.92	3.00	3.74	4.71	—
Tarsus	1.26	1.22	1.95	2.52	2.40
Total	16.57	15.75	15.84	21.92	11.49

Trichobothria: tibiae: I ant. row 3, post. 4 (both 1:3B); II both rows 3 (1:3B); III ant. row 5 (1:2B), post. 4 (1:3B); IV ant. row 3, post. 7 (both 1:4B); palp ant. row 3, post. 2 (both 1:4B); metatarsi: I 14 (2:3A); II 16 (2:3A); III, IV 17 (2:3A); tarsi: I 14; II 16; III

15; IV 12 (on I–III forming band 3–5 trichobothria wide; on IV in double row); palp 7 (2:4M); trichobothrial bases very slightly corrugated (fig. 21). Spines: femora: all bare; patellae: palp 1P; I, II 1RA inf.; III 0/1P, 1R; IV about 60–70d ant. (basal ones stronger); tibiae: palp 2P, 3R; I 5/6P, 14/15R; II 4/5P (2:3B), 13R; III 4RA; IV 0; metatarsi: I 11/12P, 12/13R; II 10/11P, 9R; III about 70–80d; IV 2/3P inf. (1:4A); tarsi: palp 6P, 6R, several v (medial row free of setae); I 2R, about 40v (medial row free of setae); II 1R, about 40v (medial row free of setae); III about 30d; IV 0. Patella and tibia III with thick (but not spiniform) setae; patella and tibia IV with thick, long, erect setae. Paired tarsal claws: I, II ant. T-d, post. T; III ant. T, post. TT; IV ant. T-T-d, post. bare; palpal claw Td; inferior claws all bare, claw well-developed on tarsus III (fig. 12). Preening combs present only on metatarsi III (8vr, very inconspicuous) and IV (10–12vr, inconspicuous), formed of thin, widely separated bristles. Abdomen without spiniform setae on anterior edge. Spinnerets short; apical article of posteriors domed, with about 30 convergent



Fig. 37. *Calathotarsus coronatus* Simon, male from Cerro La Campana, Chile; photograph by L. Sorkin.

spigots, medial article with 12 spigots around other thicker ones, basal article without spigots, spigots set in clearly delimited area slightly less sclerotized than remainder of cuticle; anterior spinnerets with apical spigots. Spermathecae moderately long, expanded distally (fig. 26).

MATERIAL EXAMINED: Only the holotype.

DISTRIBUTION: Known only from Malleco, Chile.

Calathotarsus coronatus Simon

Figures 13, 22, 28–37

Calathotarsus coronatus Simon, 1903: 21 (female and juvenile male syntypes from Santiago, Region Metropolitana, Chile, in MNHN, examined). — Schiapelli and Gerschman (1973: 293, figs. 1–4. — Legendre and Calderón, 1984: 1043, pl. XII, figs. 1–14.

DIAGNOSIS: The genus *Calathotarsus* contains only this Chilean species and *C. simoni* Schiapelli and Gerschman (1975) from Buenos Aires province, Argentina. There is little doubt that the genus is monophyletic, as the species share a greatly widened eye pattern (fig. 28), a sinuous male metatarsus I (figs. 31, 37), and a highly modified female palpal tibia bearing a rastelliform row of dorsodistal cusps (fig. 35) and a distoventral expansion (fig. 36), as well as the presence of an intercheliceral tumescence. Although widely separated geographically, the two species of *Calathotarsus* are very similar. Males of *C. coronatus*, newly described here, have slightly longer palpal tibiae (width/length ratio 0.33–0.38, mean

0.36, $N = 6$, as opposed to 0.42, $N = 2$) with a less conspicuous retrodistal expansion, lack prolateral and retrolateral spines on metatarsi I (fig. 31; there are 3–4 each in male *C. simoni*), have more spines on tibia I (at least 12, as opposed to seven or fewer), with more prolateral spines than retrolateral ones (figs. 29, 30; there are more retrolaterals in male *C. simoni*), and have enlarged setae on the femora that are lacking in male *C. simoni*.

MALE: Carapace and appendages yellowish, abdomen gray. Carapace (fig. 28) 5.56 long, 5.20 wide, 4.14 high, with posterior margin rounded, not notched; pars cephalica slightly convex, height 1.24 times that of pars thoracica, length 0.59 of width, occupying 0.55 of carapace length, 0.62 of carapace width; fovea deep, recurved, with two posteromedian depressions, occupying 0.19 of carapace width. Eyes occupying 0.80 of cephalic width, OQ 3.53 times wider than long, MOQ 3.44 times wider than long; clypeal length half of OQ length. Three setae set in small notch in carapace margin in front of AME, followed posteriorly by one thick seta, two setae behind AME, three inconspicuous setae, in two convergent rows, behind each PME, posterior edge of pars thoracica with 25 setae, lateral margins of carapace with scattered setae. Chelicerae with some thick setae along frontal edge but without rastellum; intercheliceral tumescence present but not covered with thick setae as in Pycnothelinae; fangs keeled, without basal tooth; inner margin with 4–5 teeth, outer with three larger teeth and one small, separated apical tooth, five large denticles between margins. Labium without cuspules (fig. 32), length 0.96 of width. Palpal coxae without cuspules, width 0.49 of length. Sternal width 0.84 of length, with only posterior sigilla visible; labium separated by shallow groove. Leg formula 4123; tibia I without spur but with retrodistal megaspine; metatarsus I sinuous (fig. 31); tibia III not excavated. Measurements:

	I	II	III	IV	Palp
Femur	6.01	5.28	4.22	5.52	3.25
Patella-tibia	7.06	6.25	5.08	7.27	4.22
Metatarsus	4.18	4.12	3.78	4.47	—
Tarsus	1.30	1.50	1.79	1.87	1.22
Total	18.55	17.15	14.87	19.13	8.69

Trichobothria: tibiae: I ant. row 3, post. 4 (both rows 1:4B); II both rows 4 (1:3B); III ant. row 6 (2:3B), post. 3 (1:3B); IV ant. row 3 (1:4B), post. 4 (1:2B); palp ant. row 2 (1:3M), post. 0; metatarsi: I 7 (1:4A); II 10 (2:5A); III 12 (2:3A); IV 8 (2:3A); tarsi: I, II 14 (forming band); III 16 (forming band); IV 7 (forming double row); palp 4 (1:3M); trichobothrial bases presumably with elevated hood (fig. 22, only female examined). Spines: femora: palp 3dA; I, II 1-1-1d, 4/5dA, 1pM sup., 1rM sup.; III 1-2-1d, 3dA; IV 1-1/1-1-1d, 3/4dA; patellae: palp 1pA inf.; I 3/4PA, 2RA inf.; II 2PA, 2/3RA inf.; III 14P (1:4A), 5/6RA, several d, p, r; IV about 25/30dB ant.; tibiae: palp 0; I 11/13P inf., 5/6R inf. (apical one very thick); II 2-2-2-1V, 1v ant.; III 1-3v ant. (1:3A), 1-4v post. (1:3A), with apical seven forming verticil; IV 4/5v; metatarsi: I 4/5VA (very small), 8/9V (1:3A, minute); II 1-1-1R inf. (2:3A); III 1PA, 1RA, 6/7v post.; IV 1-1-1P inf. (1:2A), 1R inf. (1:3A); tarsi: palp 0; I 2/4R inf., 15V (very short); II 6/7 (1:2A, very short); III, IV 0. Paired tarsal claws: I, II both claws T-T-d; III ant. T-d-T, post. T-T; IV ant. T-T-T-d, post. T-T-d; inferior claws all bare, that of leg III minute (even smaller than in female, fig. 13). Preening combs present only on metatarsi III, IV, very conspicuous, formed of thin bristles; metatarsus III with comb of 10 bristles on ventral half (RA spine behind comb), metatarsus IV with comb of 20 bristles (comb behind PA spine). All tarsi with light scopulae (fig. 31), heaviest on legs III, IV. Abdomen without spiniform setae on anterior edge; epigastric area with about 35 epiandric spigots. Spinnerets short; apical article of posteriors with four spigots larger than others, grouped, medial article with four or five spigots larger than others, grouped, basal article without spigots, spigots set in clearly delimited area less sclerotized than remainder of cuticle; anterior spinnerets with about six spigots. Palp long (fig. 33); femur length 0.57 of femur I length; palpal tibia long, width 0.36 of length, with inconspicuous retrodistal expansion; tarsus bilobed, lobes similar; bulb as in figure 34.

FEMALE: Described by Legendre and Calderón (1984).

VARIATION: Some males have only three apical ventral spines on metatarsi I.

MATERIAL EXAMINED: CHILE: **Region de Valparaíso (V):** *Quillota*: Cerro La Campana, Parque Nacional La Campana, Aug. 12-26, 1981, elev. 1080 m (R. Calderón G., RCG, AMNH), 6♀, 2 juv., Feb. 11, 1986, elev. 980 m, in sealed tube at top of dry hillside (N. I. Platnick, R. Calderón G., R. T. Schuh, AMNH), 1♂. **Region Metropolitana:** *Chacabuco*: Lampa, May 1979 (L. E. Peña G., AMNH), 2♂. *Cordillera*: El Canelo, Sept. 8, 1966, elev. 950 m (E. I. Schlinger, M. Irwin, L. E. Peña G., UCB), 1♀; Maipo Canyon, El Canelo, Dec. 1984, elev. 850 m (L. E. Peña G., AMNH), 1♂. *Santiago*: Quilicura, July-Sept. 1979 (L. E. Peña G., AMNH, RCG), 2♂; Santiago (MNH), 1♀, 1 juv. ♂ (syntypes).

DISTRIBUTION: Aconcagua to Santiago, Chile; two juvenile males taken 20 km west of Vilches in Talca by P. A. Goloboff and E. A. Maury (MACN 8340) may belong to this species and indicate a wider range.

NATURAL HISTORY: See Claude Joseph (1926, 1930).

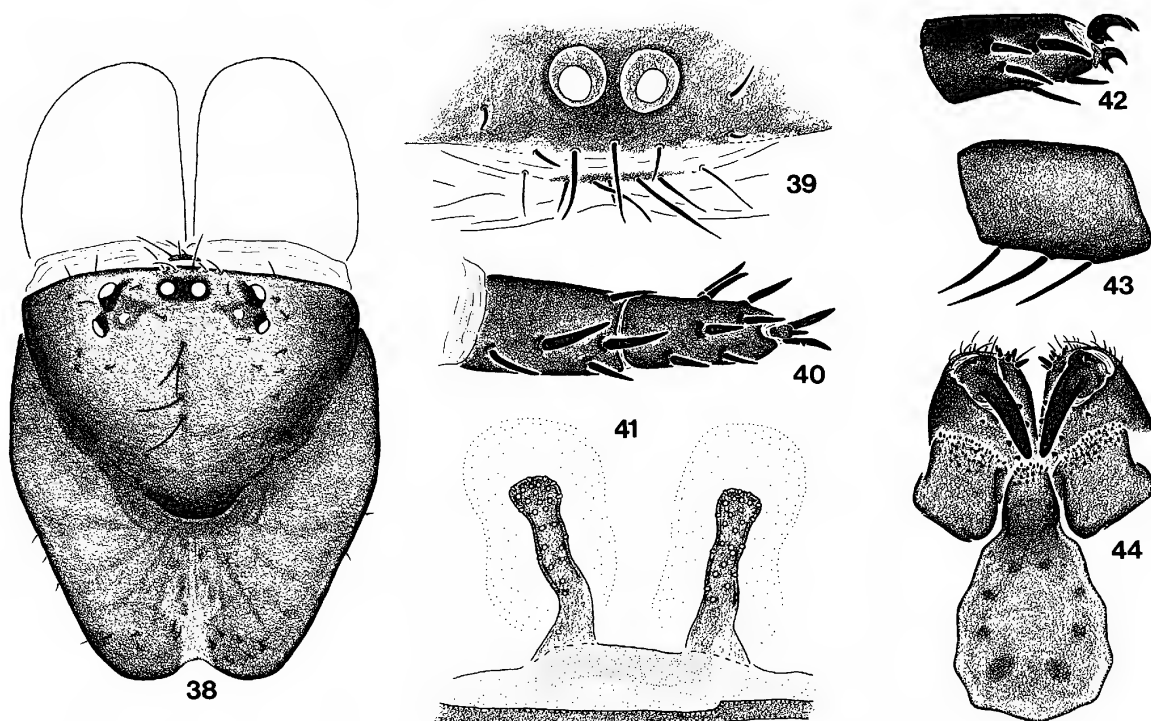
ACTINOPODIDAE SIMON

Plesiolena, new genus

TYPE SPECIES: *Missulena bonneti* (Zapfe, 1961).

ETYMOLOGY: The generic name is a contraction of plesiomorphic *Missulena* and is feminine in gender.

DIAGNOSIS AND RELATIONSHIPS: Raven (1984) tentatively transferred *Heteromigas bonneti*, described by Zapfe (1961) as a migid, to the Neotropical actinopodid genus *Actinopus*. Subsequently, Raven (1985) transferred the species to the only other actinopodid genus (*Missulena*, from Australia) instead, based in part on the redescription by Legendre and Calderón (1984). Raven's transfer of the species to the Actinopodidae is correct, for the species has both of the putative actinopodid synapomorphies (a long labium and subquadrate palpal coxae) and lacks all three of the putative migid synapomorphies (it retains a well-developed rastellum and a procurved fovea, and lacks keels on the cheliceral fangs; in addition spigots are still present on the basal article of the posterior spinnerets). There may be a third actinopodid synapomorphy in the form of the trichobothrial bases; representatives of all



Figs. 38–44. *Plesiolena bonneti* (Zapfe), female. 38. Carapace and chelicerae, dorsal view. 39. Ocular area and chilum, dorsal view. 40. Left metatarsus and tarsus I, ventral view. 41. Spermathecae, dorsal view. 42. Left tarsus I, prolateral view. 43. Left tibia I, retrolateral view. 44. Sternum, labium, palpal coxae, and chelicerae, ventral view.

three genera have a curiously sinuous impression around the tricheme aperture that, to our knowledge, is found in no other spiders (see figs. 17–22).

Although *Actinopus* has not been revised, its species are relatively uniform, and a preliminary search indicates that they share at least five possible synapomorphies: the rastellum is on a long projection; the second and third pair of sternal sigilla are confluent; the third patella and tibia have short cusps; the female tibia II has more spines than does tibia I; and the male palpal bulb has two apophyses (a parembolic one and a basal one). These characters are not found in Australian *Missulena*, the Migidae, or related families of the Domiothelina (see Raven, 1985, for discussions of some of these characters and taxa). *Plesiolena* does not agree with *Actinopus* in these characters: the cheliceral apex is rounded (figs. 38, 44), the sternal sigilla are well separated (fig. 44), patella and tibia III have normal spines, the female tibiae I and II have

similar spination, and the male palpal bulb lacks apophyses (Legendre and Calderón, 1984, pl. XI, figs. 11, 12).

Plesiolena does agree with the Australian species of *Missulena* in several other characters. The monophyly of *Missulena* plus *Plesiolena* is strongly supported by three putative synapomorphies that are not found in other members of the Migoidea. First, the tarsal trichobothria form a straight row; in *Actinopus*, the Migidae, and other Rastelloidina they form a wide band (Legendre and Calderón, 1984, pl. XII, fig. 8; Goloboff, in press, fig. 30) or (in some Idiopidae and Cyrtacheniiidae) a zigzag row. Although Legendre and Calderón (1984: 1045) indicated that the disposition of trichobothria in the female of *Calathotarsus coronatus* is “fort différente des autres mygalomorphes néotropicales” such a trichobothrial pattern is in fact found in *Migas*, *Actinopus*, *Idiops*, *Neocteniza*, *Ummidia*, and the new genus *Mallecomigas*. Second, the sternum has two anterior

sigilla (Raven, 1985), and third, the inferior tarsal claws are dentate in males (and usually in females as well). Loss of teeth on the inferior claws was cited by Raven (1985) as a synapomorphy of the Domiothelina; their presence in *Missulena* and *Plesiolena* is more parsimoniously interpreted as a reversal than a plesiomorphic retention, which would require numerous parallel losses of the teeth in other genera. In addition, there are three other characters that might be synapomorphies of *Missulena* plus *Plesiolena*: the fourth tibia has an unusual apical comb of dorsal spines (Platnick and Shadab, 1976); tarsi I and II have ventral spines (figs. 40, 42) that are generally absent in mygalomorphs; and tibiae I and II are weakly spined (fig. 43; *Actinopus*, the Migidae, and other Domiothelina have numerous strong spines on the lateral faces of these segments). An additional three characters common to *Missulena* and *Plesiolena* but possibly plesiomorphic are: postocular setae on the cephalic area (fig. 38); several teeth on the superior tarsal claws of males; and a rebordered margin on the male carapace. The first two of these characters are found in a roughly similar state in most migids, and the third is found in the relatively plesiomorphic migid genus *Calathotarsus* as well as in some *Moggridgea*.

The monophyly of the Australian species of *Missulena* is strongly supported by at least four apparent synapomorphies: whereas in males of *Actinopus*, *Plesiolena bonneti*, and some migids (for example, *Heteromigas*) the palp is very long, the first patellae lack spines, the sternal margin is normal, and the palpal embolus is widened and curved, males of the Australian *Missulena* species have short palps (shorter than the first legs), the first patellae have strong spines (Womersley, 1943), the sternum is rebordered (Raven, 1985), and the palpal embolus is thinner and almost straight. Hence *P. bonneti*, although clearly more closely related to *Missulena* than to *Actinopus*, seems to represent the sister group of the Australian species of *Missulena* and is therefore placed in a separate genus here. Both the relatively long chelicerae of males and the presence of an abdominal pattern may be autapomorphies of *Plesiolena*, although the second character is found in some Australian *Missulena*. Outgroup comparison with *Plesi-*

olena suggests that some other characters of *Missulena* may be derived (including having the sternum as wide as long, males with the cephalic area bright red, and cusps on the labium and palpal coxae); however, these characters vary within *Missulena*, and the second one also occurs in some Brazilian species of *Actinopus*.

DESCRIPTION: See species description.

Plesiolena bonneti (Zapfe),
new combination

Figures 14, 19, 37–44

Heteromigas bonneti Zapfe, 1961: 152, figs. 2, 3 (male holotype from La Herradura, Elqui, Region de Coquimbo [IV], Chile, in MNHN, examined). — Legendre and Calderón, 1984: 1041, pl. XI, figs. 1–12.

Actinopus bonneti: Raven, 1984: 380.

Missulena bonneti: Raven, 1985: 144.

DIAGNOSIS: Males can be recognized by the very long palps (Zapfe, 1961, fig. 2), females (newly described here) by the very long spermathecae (fig. 41).

MALE: Described by Zapfe (1961) and Legendre and Calderón (1984).

FEMALE: Carapace and appendages olive brown; abdomen gray with cardiac area slightly darker. Carapace (fig. 38) 4.20 long, 3.87 wide, 4.43 high, with posterior margin notched; pars cephalica greatly elevated, convex, height 1.72 times that of pars thoracica, length 0.71 of width, occupying 0.59 of carapace length, 0.90 of carapace width; fovea strongly procurved, deep, occupying 0.31 of carapace width. Eyes occupying 0.54 of cephalic width, OQ 3.69 times wider than long, MOQ 4.14 times wider than long. Six setae on small sclerotized chilum (fig. 39), three thick setae in front of OQ, two more beside AME, 4–6 at sides of LE and extending posteriorly, medial row of four thick, long setae behind OQ. Chelicerae distally rounded, with well-developed rastellum of four thick cusps, two minor cusps, and 3–4 thick setae situated laterally; inner margin with row of seven teeth (first, third, and fourth most proximal smaller than others), most distal tooth fused with three more distal denticles, outer margin with three large teeth proximally, one widely separated, small tooth distally, about nine denticles scattered between margins; fangs not

keeled, with small outer basal tooth. Labium with 20 cuspules extending to anterior face (fig. 44), width 0.89 of length. Palpal coxae subquadrate, with about 40/45 cuspules extending to anterior face. Sternal width 0.83 of length, surface with eight sigilla, pair I well marked, II, III small, oval, IV deeper, larger. Leg formula 4312; tibiae and metatarsi I, II not flattened; tibia III not excavated. Measurements:

	I	II	III	IV	Palp
Femur	2.52	2.25	2.61	2.95	2.28
Patella-tibia	2.68	2.28	2.58	3.11	2.38
Metatarsus	1.16	1.03	1.29	1.52	—
Tarsus	<u>0.83</u>	<u>0.79</u>	<u>1.11</u>	<u>1.17</u>	<u>1.36</u>
Total	7.19	6.35	7.59	8.75	6.02

Trichobothria: tibiae: I ant. row 3, post. 2 (both rows 1:3B); II both rows 3 (1:3B); III both rows 2B; IV ant. row 3 (1:3B), post. 4 (1:2B); palp ant. row 3, post. 1 (both rows 1:3B); metatarsi: I, II 3 (1:2A); III 2 (1:3A); IV 4 (1:2A); tarsi: I–IV 3 (1:2B, in single row); palp 3 (1:3M); trichobothrial bases with sinuous impression around tricheme aperture (fig. 19). Spines (anterior legs with spines mainly on ventral surface): femora: palp 3v; I–IV 0; patellae: palp 1p; I, II 0; III 14/15P sup., comb of 8PA; IV 16/19R sup.; tibiae: palp 1-1-1p, 1-1-1r (very long); I, II 1-1-1r inf. (long); III 1/2D ant., comb of 8DA (2 post., 6 ant.); IV comb of 4/5DA; metatarsi: I 1VA ant., 2-1-2V post.; II 1-1-1V post.; III 1-2-1-1-2/1-2-2-1-2-1D ant., 1-1-1/1-1-1-2D post.; IV 1-1P inf. (1:2A), 1-1PM sup., 2/3 PA sup.; tarsi: palp 5P, 5/6R inf., 1VA ant.; I 2-1P, 1-1V post., 1-1V (1:3A); II 1-1P, 1-1V post., 1-1V (1:3A); III 2/3P inf., 7R inf., 2-2D (all 1:2A); IV 14P (2:3A), 1RA sup., 3VA post., some r inf. (2:3A). Paired tarsal claws: I ant. Td, post. T; II–IV both claws T; palpal claw TT; inferior claws I, II Td, III T and long d (fig. 14); IV T. Preening combs absent. Abdomen without spiniform setae on anterior edge. Spinnerets short; apical article of posteriors with 15 spigots, medial article with 10–12, basal article with 5–6 (on each article, one spigot larger than others), all spigots set in clearly delimited area less sclerotized than remainder of cuticle. Spermathecae long (fig. 41).

VARIATION: Some females lack the apical tooth on the outer margin of one or both chelicerae. Juveniles agree with adults in most characters; the inferior claw has teeth but no denticles, the sternum is relatively wider and has both anterior sigilla well marked (and relatively farther apart), and the apical cheliceral tooth is usually relatively larger than in adults.

MATERIAL EXAMINED: CHILE: **Region de Coquimbo (IV):** *Elqui*: La Herradura, May 1957 (H. Zapfe, MNS 3636), 1♂ (holotype). **Region de Valparaíso (V):** *Petorca*: Caleta Pichicuy, Quebrada Huaquén, Jan. 1984 (P. A. Goloboff, E. A. Maury, MACN 8341, 8342, AMNH), 12♀, 8 juv. ♂, 4 juv. *Quillota*: Cerro La Campana, Parque Nacional La Campana, May 1976, elev. 1080 m, pitfall trap (R. Calderón G., RCG), 1♀ with 4 spiderlings, 1 juv.

DISTRIBUTION: Southern Coquimbo and Valparaíso, Chile.

NATURAL HISTORY: The specimens from Quebrada Huaquén were collected in a scrubby habitat on the north bank of a creek that leads to the sea. Other mygalomorphs collected syntopically include *Acanthogonatus campanae* (Legendre and Calderón), *A. sp.*, *Chilehexops australis* (Mello-Leitão), and two theraphosid species probably belonging to *Paraphysa*. In some parts of the creek bank, one or the other *Acanthogonatus* species, or the theraphosids, were more abundant; the *Plesiolenas* were found in only one area (at the foot of the slope, with more abundant vegetation and wetter soil), where the grouped burrows (concentrated in a few square meters) were the only mygalomorph constructs found. The burrows were capped by wafer-type trapdoors, inclined from the horizontal by 45 degrees or less, and had raked walls covered with little silk.

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